New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

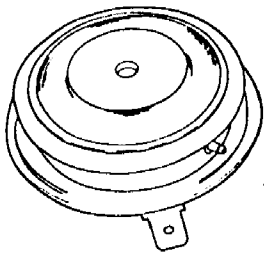
TELEPHONE: (973) 376-2922

# HIGH SPEED
# Silicon Controlled Rectifier

**C364/C365**

**600 Volts** **275 A RMS**

AMPLIFYING GATE



C364 and C365 Silicon Controlled Rectifiers are designed for power switching at high frequencies. These are all-diffused Press-Pak devices employing the field-proven amplifying gate.

**FEATURES:**

- Fully characterized for operation in inverter and chopper applications.
- High di/dt ratings.
- High dv/dt capability with selections available.
- Rugged hermetic glazed ceramic package.

## MAXIMUM ALLOWABLE RATINGS

| TYPES | REPETITIVE PEAK OFF-STATE VOLTAGE, $V_{DRM}$[1] $T_J$ = -40°C to +125°C | REPETITIVE PEAK REVERSE VOLTAGE, $V_{RRM}$[1] $T_J$ = -40°C to +125°C | NON-REPETITIVE PEAK REVERSE VOLTAGE, $V_{RSM}$[1] $T_J$ = +125°C |
|---|---|---|---|
| C364/C365A | 100 Volts | 100 Volts | 200 Volts |
| C364/C365B | 200 | 200 | 300 |
| C364/C365C | 300 | 300 | 400 |
| C364/C365D | 400 | 400 | 500 |
| C364/C365E | 500 | 500 | 600 |
| C364/C365M | 600 | 600 | 720 |
| C365S | 700 | 700 | 840 |
| C365N | 800 | 800 | 960 |

[1] Half sinewave waveform, 10 ms max. pulse width.

RMS On-State Current, $I_{T(RMS)}$ . . . . . 275 Amperes
Peak One Cycle Surge (Non-Repetitive) On-State Current, $I_{TSM}$ (60 Hz) . . . . . 1800 Amperes
Peak One Cycle Surge (Non-Repetitive) On-State Current, $I_{TSM}$ (50 Hz) . . . . . 1700 Amperes
$I^2t$ (for fusing) for times ≥ 1.5 milliseconds . . . . . 9,500 (RMS Ampere)$^2$ Seconds
$I^2t$ (for fusing) for times ≥ 8.3 milliseconds . . . . . 13,500 (RMS Ampere)$^2$ Seconds
Critical Rate-of-Rise of On-State Current, Non-Repetitive . . . . . 800 A/μs †
Critical Rate-of-Rise of On-State Current, Repetitive . . . . . 500 A/μs †
Average Gate Power Dissipation, $P_{G(AV)}$ . . . . . 2 Watts
Storage Temperature, $T_{stg}$ . . . . . -40°C to +150°C
Operating Temperature, $T_J$ . . . . . -40°C to +125°C
Mounting Force Required . . . . . 150 ± 10%
135 ± 10%

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

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## CHARACTERISTICS

| TEST | SYMBOL | MIN. | TYP. | MAX. | UNITS | TEST CONDITION |
|---|---|---|---|---|---|---|
| Repetitive Peak Reverse and Off-State Current | $I_{RRM}$ and $I_{DRM}$ | -- | 5 | 12 | mA | $T_J$ = +25°C<br>V = $V_{DRM}$ = $V_{RRM}$ |
| Repetitive Peak Reverse and Off-State Current | $I_{RRM}$ and $I_{DRM}$ | -- | 12 | 17 | mA | $T_J$ = 125°C<br>V = $V_{DRM}$ = $V_{RRM}$ |
| Thermal Resistance | $R_{\theta JC}$ | -- | .12 | .135 | °C/Watt | Junction-to-Case (Double-Side Cooled) |
| | | -- | .15 | .26 | | Junction-to-Case (Single-Side Cooled) |
| Critical Rate-of-Rise of Off-State Voltage (Higher values may cause device switching) | dv/dt | 200 | 500 | | V/μsec | $T_J$ = +125°C, Gate Open. $V_{DRM}$ = Rated Linear or Exponential Rising Waveform.<br>Exponential dv/dt = $V_{DRM}$ (.632)/$\tau$ |
| Higher minimum dv/dt selections available – consult factory. | | | | | | |
| Holding Current | $I_H$ | -- | 40 | 1000 | mAdc | $T_C$ = +25°C, Anode Supply = 24 Vdc. Initial On-State Current = 2 Amps. |
| DC Gate Trigger Current | $I_{GT}$ | | 70 | 250 | mAdc | $T_C$ = +25°C, $V_D$ = 6 Vdc, $R_L$ = 3 Ohms |
| | | -- | 100 | 400 | | $T_C$ = -40°C, $V_D$ = 6 Vdc, $R_L$ = 3 Ohms |
| | | | 25 | 175 | | $T_C$ = +125°C, $V_D$ = 6 Vdc, $R_L$ = 3 Ohms |
| DC Gate Trigger Voltage | $V_{GT}$ | -- | 3 | 5 | Vdc | $T_C$ = -40°C to 0°C, $V_D$ = 6 Vdc, $R_L$ = 3 Ohms |
| | | -- | 1.25 | 3.0 | | $T_C$ = 0°C to +125°C, $V_D$ = 6 Vdc, $R_L$ = 3 Ohms |
| | | 0.15 | | -- | | $T_C$ = 125°C, $V_{DRM}$, $R_L$ = 1000 Ohms |
| Peak On-State Voltage | $V_{TM}$ | -- | 1.9 | 2.6 | Volts | $T_C$ = +25°C, $I_{TM}$ = 500 Amps. Peak Duty Cycle ≤ .01% |
| Turn-On Delay Time | $t_d$ | -- | 0.5 | -- | μsec | $T_C$ = +25°C, $I_T$ = 50 Adc, $V_{DRM}$, Gate Supply: 20 Volt Open Circuit, 20 Ohm, 0.1 μsec max. rise time. ††, ††† |
| Conventional Circuit Commutated Turn-Off Time (with Reverse Voltage)<br>Faster Maximum Turn-Off Times Available, Consult Factory | $t_q$<br>C364<br>C365 | | <br>8<br>15 | <br>10<br>20 | μsec | (1) $T_C$ = +125°C<br>(2) $I_{TM}$ = 150 Amps.<br>(3) $V_R$ = 50 Volts Min.<br>(4) $V_{DRM}$ (Reapplied)<br>(5) Rate-of-Rise of Reapplied Off-State Voltage = 200 V/μsec (linear)<br>(6) Commutation di/dt = 5 Amps/μsec.<br>(7) Repetition Rate = 1 pps.<br>(8) Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms |
| Conventional Circuit Commutated Turn-Off Time (with Feedback Diode) | $t_{q(diode)}$<br>C364<br>C365 | <br>--<br>-- | <br>15<br>20 | <br>†<br>† | μsec | (1) $T_C$ = +125°C<br>(2) $I_{TM}$ = 150 Amps.<br>(3) $V_R$ = 1 Volt<br>(4) $V_{DRM}$ (Reapplied)<br>(5) Rate-of-Rise of Reapplied Forward Blocking Voltage = 200 V/μsec (linear)<br>(6) Commutation di/dt = 5 Amps/μsec<br>(7) Repetition Rate = 1 pss.<br>(8) Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms. |

†Consult factory for specified maximum Turn-Off Time.
††Delay time may increase significantly as the gate drive approaches the $I_{GT}$ of the Device Under Test.
†††Current risetime as measured with a current probe, or voltage risetime across a non-inductive resistor.

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